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ABSTRACT

The curricular question of educational purposes is generally answered by Language Arts Specialists in terms of the traditional language skills. Two ideas to better answer this question are proposed: Professor William E. Bull's model of the communication process and his adaptation of the mathematical Theory of Sets to language study. Bull's model of communication is described as including four phases: precoding, encoding, transmission and decoding. The importance of Set Theory in language study is explained. The language skills of listening comprehension, speaking, reading and writing are identified in terms of the phases in the proposed communication model and Set Theory. The precoding phase of the model is found to have no curricular equivalent in any skill. The same is true for Set Theory. Specific goals or educational purposes for the language arts curriculum in bilingual programs and instructional objectives derived from Bull's model and Set Theory are provided. (Author/KM)

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THEORETICAL BASIS FOR THE DEVELOPMENT OF THE LANGUAGE ARTS CURRICULUM IN BILINGUAL PROGRAMS

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THEORETICAL BASIS FOR THE DEVELOPMENT OF THE LANGUAGE ARTS CURRICULUM IN BILINGUAL PROGRAMS

Ralph Tyler has proposed that in developing any curriculum or plan of instruction, four fundamental questions must be answered[1]. These are:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained?

To wnswer the first question -- what educational purposes should the school seek to attain?, Tyler suggests consulting three basic sources of information from which purposes or educational objectives may be derived.

These sources are:

a) studies on contemporary society;

b) studies about learners; and

c) subject matter specialists, that is, specialists in the fields of study traditionally recognized -- mathematics, physics, English, Spanish, etc.

In this paper we propose to analyze how the curricular question of purposes or educational objectives is generally answered by Language

Arts Specialists. We then present two ideas which may help in better answering this question and offer some suggestions on the specific objectives or purposes which may be derived from these two ideas.

Traditionally, Language Arts Curriculum Specialists have answered the question of educational purposes or objectives in terms of skills. They have said that the development of skills in Listening Comprehension, Speaking, Reading and Writing should be the main objectives of the Language Arts Curriculum. For the purposes of organizing the curriculum, Language Arts Specialists generally conceive these four broad skill categories as comprising more specific content areas. Reading, for example is divided into 'decoding', 'vocabulary comprehension', etc. Speaking includes 'diction', 'declamation', 'rhetoric', etc.

We propose that, indeed, the development of skills in Listening Comprehension, Speaking, Reading and Writing are important educational objectives, but we perceive a unifying thread which runs through all categories and subcategories of the Language Arts Curriculum as traditionally defined. This thread is the process of communication. Whether the student is developing Listening Comprehension skills or writing poetry, the goal in all cases is to make him a more effective encoder or decoder or messages, in short, a more effective participant in the process of communication.

In our view, then, and with specific reference to the bilingual classroom, the major goal of the Language Arts Curriculum may be stated as follows: the student will become a more effective participant in the process of communication conducted in any one of two languages. For the purposes of this presentation, the languages alluded

to in the previous goal are Englisn and Spanish. The ideas presented here apply to any other languages.

The task of achieving this goal is complex and difficult. Presently, however, we have two important concepts in the field of Linguistics which may provide guidance in developing an effective Language Arts Curriculum.

Professor William E. Bull[2] formulated these ideas based on the work of many other linguists. Important research[3] has been carried out applying these ideas to the study of entity and event labels and to other types of labels. These two ideas are: a model of the communication process and an adaptation of the mathematical theory of sets to language analysis resulting in the postulation of Set Theory to explain linguistic behavior.

The Communication Process

We said that, in our view, the main goal of the Language Arts Curriculum is to make the student a more effective participant in the process of communication. We may then ask: What does a person do when he or she participates in the communication process? Bull has proposed a model which may help explain how this is done. The model includes four basic processes: Precoding, Encoding, Transmission and Decoding. (See Figure 1).

Let's suppose that a speaker wants to talk about a certain reality, for example, a group of persons. He observes this reality and its organization. Then he abstracts certain features which the culture has indicated are important in talking about this reality. For example:

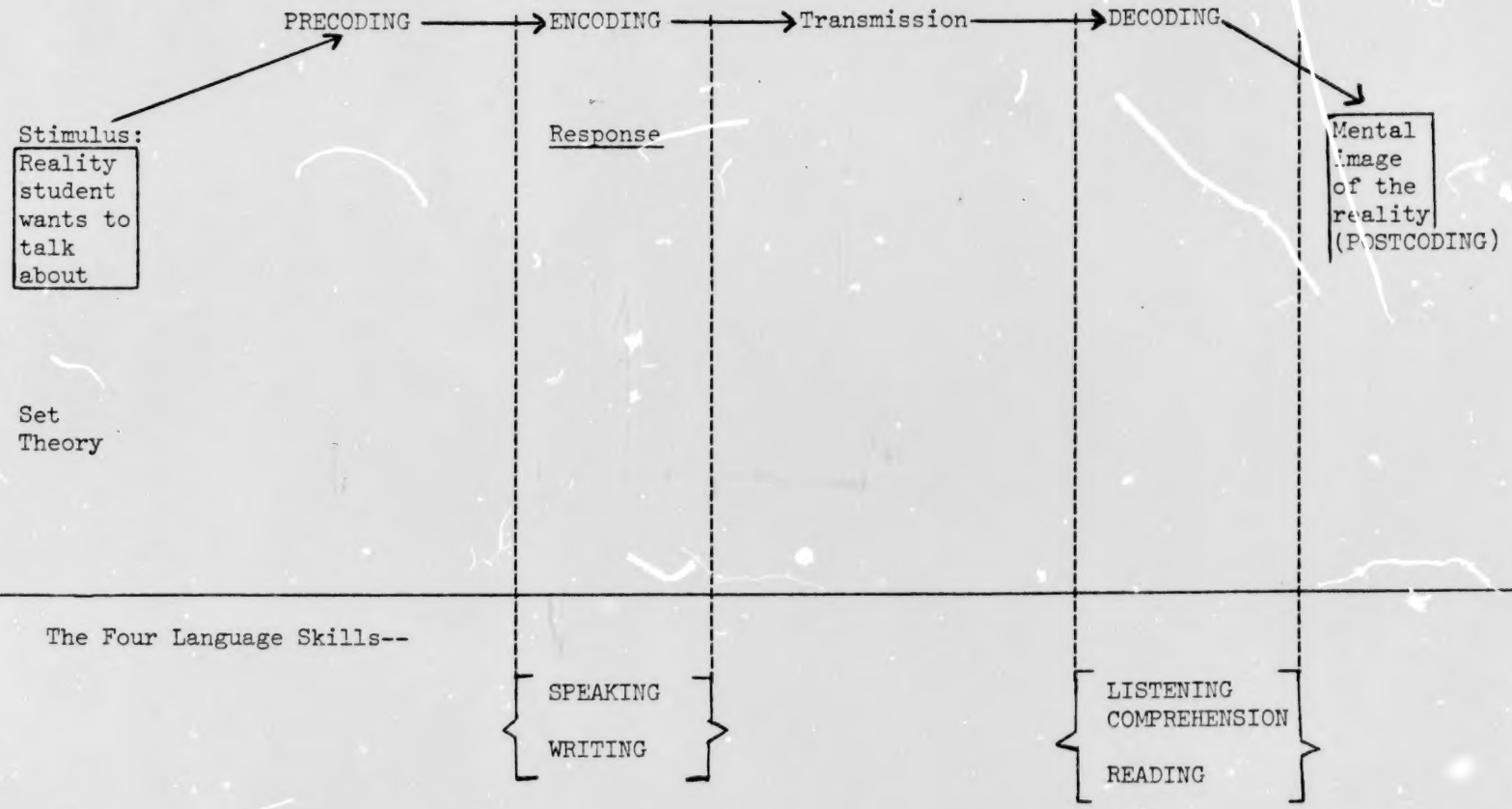
1) the group is made up of entities, animate entities in this case. 2) the age, social rank, professional affiliation, sex, etc. of the members of the group. 3) the subject of discourse which has been maintained previously in the conversation. 4) the substance of the message to be communicated, e.g. location of entities, etc. This phase of the communication process is termed PRECODING. Hubert Molina dedicated an entire chapter of his dissertation "A Model of a Pedagogical Grammar"[4] to describe the precoding information needed by a speaker before he can encode a message. Precoding is described as being consistent with the way in which a particular culture organizes reality. The steps necessary to obtain precoding information occur prior to the speaker's decisions at the syntactic level and are appart from information supplied by formal grammars.

Once the precoding has ended with the above-mentioned set of abstractions, the speakers then refers to the language system to determine how this system allows him to ENCODE the message he wants to communicate. Spanish offers different ways to encode the message. However, once a way of sending the message is chosen, (optional choice), then the system requires certain arbitrary conventions (obligatory choices). The speaker can say: "Hay unos señores en la casa ahora" or "Unos señores acaban de entrar en la casa." In English, similarly, "There are some men in the house now" or "Some men have just entered the house." Both messages convey the same idea. The precoding activity in Spanish signaled the choice of señores but not hombres (a sociological choice not as clearly marked in English men); unos "some" but not los "the"; etc. Spanish also requires the plural marker -n with acaba to match señores and unos señores "some men" after hay "there is, are".

When the message encoded by the speaker reaches the listener, it is DECODED (postcoded) that is, the listener forms mental image of the reality the speaker is talking about. Successful communication in Bull's model is defined in terms of the speaker's ability to encode the message so that the listener decodes the intended message. This ability is based on the speaker's perception of the reality he wants to talk about and its organization, and also on his knowledge of how this reality accounts for the existence and the functions of the forms of his language. Schematically we may represent Bull's model of the communication process as shown in the following page:

FIGURE 1

Bull's model of the communication process--



Set Theory

We also indicated that Bull has adpated the mathematical Theory of sets to language analysis. Let's see how Bull's Set Theory fits into the picture of the communication process.

Bull has said:

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The categories mentioned above may potentially be thought of as 'semantic sets'. Essentially, a set is a collection of elements which share a certain determined characteristic. Sets are determined by their members. A set A is fully described by describing all the elements of A. The notion of a set is very general, because there is virtually no restriction on the nature of the things which may be elements of a set.

In biological classification, a set is established if all members share one characteristic. As specifications are added, subsets are added but each subset shares in common those elements which made it a part of the super-set to begin with.

In description of language, sets may be established according to formal criteria (i.e., noun, verb, suffixes, etc.), syntactic criteria (what combinations are possible) and semantic criteria (what is the nature of the entity or event under discussion). In the studies referred to before, the use of the term set always refers to sets established primarily by semantic criteria, although the structural implications are made evident.

Now, what is the relationship between Bull's model of communication and Set Theory? A speaker cannot encode a message until he decides which set his subject of discourse belongs to. He must decide what events/entities are perceived and can be analyzed, defined, and/or understood, and then how this can be expressed by the devices available in his grammar and lexicon. For example, to talk about an entity in English, the speaker cannot encode his message until he decides which set this entity belongs to--the count entity set or the

measure entity set. Once he has determined the set membership, he then refers to the language system for the devices available in the grammar or lexicon to talk about this entity. This does not negate the fact that thoughts that a given language does not have the equipment to express adequately maybe conceptualized, and new discoveries are primarly new conceptualizations which then demand new ways to be said or expressed.

To express a new concept or the label of a new entity, the speaker must first fit this new concept into an existing set which can be dealt with in his language in order to encode in the proper existing structures. He may even create a new lexical item compatible with an existing set. For example, when the astronauts first landed on the moon, Spanish quickly produced from LUNA--moon -- the form ALUNIZAR--to land on the moon--, by analogy with TIERRA--earth -- and ATERRIZAR--to land on earth--a description of reality which fits right into the existing set of 'movement' in both formation and syntactic combinatory potential. In English such examples as 'gasid' indigestion and 'sexpert' reflect the same phenomenon.

In the precoding and encoding processes, the culture's organization of reality is reflected, and it is this organization of reality, encoded and delivered as an utterance of speech, which locks into the surface features of the language, thereby becoming "grammatical" in that language. Awareness of pre-linguistic sets, e.g. events and entities, and their organization, which exist in reality prior to any attempt to verbalize them, is essential in communication. Once the speaker has determined what exists at the pre-lingual level, and what

it is he wishes to communicate, he can then determine how much he has to encode so that the listener gets the message.

The curricular implications of Bull's model of communication and his adaptation of Set Theory may now be briefly outlined.

1. The precise nature of the problems that speakers face in learning to communicate in any language can be defined. In Spanish, learning the difference between tú and usted can be defined as a learning problem which is sociological in nature. Learning to use ser or estar ('to be') with predicate adjectives can be defined as a learning problem of a cultural and a linguistic nature. Spanish and English mark a difference between stating a norm as opposed to deviation from that norm. The linguistic consequences of this cultural universal are different for the two languages: English uses intonation, while Spanish overtly marks the difference by choosing a form of ser or estar.

2. The skills or tasks that speakers must master in learning a language are redefined. Speakers must understand the precoding activity and encoding activities they use when speaking their own language, and, as students, they must learn the precoding activity and encoding processes used by native speakers of a target language.

This means that, first, speakers must learn to observe the reality they are talking about and its organization in terms of the significant features that their own culture considers in such a reality or in its organization. Second, speakers must become aware of how their own language encodes the significant features of the reality they are talking about. Third, when dealing with another language, students must understand what features of this reality are significant for the foreign

culture, how this culture organizes reality, and what logic the culture uses in this organization. Finally, students must learn how the foreign language encodes the significant features of reality about which they want to communicate in the foreign language.

3. The appropriate learning procedure can be selected to teach a particular learning problem.

Selection of such a procedure is based on the type of task or skill the student must master and the nature of the problem which he faces in learning to master this task. For example, in learning to use the past tenses we can define several tasks: learning to use the linguistic forms, learning to identify types of events, learning to identify the aspect of events, etc.

4. A complete analysis of the learning problems that students face in learning to communicate in a foreign language is possible. This has far-reaching consequences in terms of language acquisition in general. Once linguists are aware of the procedures of precoding, encoding, communication and decoding, it becomes somewhat easier to analyze the language learning process, since this model takes into account all aspects of the communication process.

5. Economy of teaching and learning time is achieved if notions of set theory are applied to the programing of learning procedures. Specific classroom procedures have been developed capitalizing on set theory and they present some exciting pedagogical implications.

6. Since Spanish and English are related cultures, an English-speaking child has already acquired a great amount of intuitive knowledge which can be made conscious knowledge, useful in learning a second language.

The same may be said of a Spanish-speaking child learning English. In dealing with the bilingual child, bringing his intuitive knowledge about language to the surface and exploiting both linguistic similarities and differences will lead to greater mastery of both languages.

Bull's model of communication and set theory help us determine which objectives or purposes are important in the Language Arts Curriculum. In precoding, the learner should practice associating the critical features of the members of a set with correct models of language forms and patterns; generating such models when presented appropriate members of known sets; establishing sets and subsets on the basis of new criteria; discriminating between the features of members of different sets; choosing appropriate language forms or patterns as the result of discrimination. In encoding the child should practice pronouncing the sounds of the two languages; identifying, in speech or in writing, the meaningful and functional parts of words; producing appropriate sequences of words; transforming given sequences or sentences into other equivalent sentences within the same language or across languages; restating given paragraphs to reflect specific styles of expressions; stating sequences of ideas in logical or coherent manner, etc. In decoding the learner should practice listening to different types of expositions, reading different types of materials; recalling, inferring, concluding; adjusting to listening or reading for different purposes; enjoying the cultural expressions of the two languages through audio and visual media, etc.

NOTES

1. Tyler, Ralph W. Basic Principles of Curriculum and Instruction. Chicago, University of Chicago Press, 1969.
   This is an excellent source for curriculum planning.
2. The precise notions of Set Theory and communications can be found in Professor Bull's book Spanish for Teachers: Applied Linguisties. New York, The Ronald Press, 1965.
   Also in his article "We need a Communications Grammar", Glossa,Vol. 2:2 (1968).
3. Among the many studies, the following are recommended:
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   Gomez, C.G. Adjective position: its relation to lexical meaning. Unpuslished master's thesis, University of California, Los Angeles, 1972.
   Molina, Hubert. A Model of a Pedagogical Grammar. Unplublished doctoral dissertation, University of California, Los Angeles, 1970.
   O'Neill, K.F. Observed phenomena of the Pluralization of Spanish measure entity lables. Unpublished master's thesis, University of California, Los Angeles, 1970.
   Thornton, J.M. A semantic classification, by sets, of the referents of selected Spanish verbs and their structural implications. Unpublished doctoral dissertation. University of California, Los Angeles, 1971.

4. Molina, Hubert. A Model of a Pedagogical Grammar. Unplished doctoral dissertation, University of California, Los Angeles, 1970. This dissertation provide an excellent example of the process of Precoding.

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